

Climatological Data for September, 1909. DISTRICT No. 10, GREAT BASIN.

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GENERAL SUMMARY.

September, 1909, was cooler than usual, although no extended periods of severe cold weather were experienced; and while killing frosts occurred at many places, no great damage was done. The precipitation over the district as a whole was considerably above the normal, the rainy periods extending over several days in many places. The number of rainy days was 5, clear days 16, partly cloudy days 9, and cloudy days 5. The sunshine averaged somewhat below normal.

TEMPERATURE.

The monthly mean temperature for the district as a whole was 59.0° which was 1.4° below the normal.

The mean monthly temperatures were nearly normal in Wyoming, but below normal in Utah, northern Nevada, and California, and above normal in Oregon. The mean temperatures at the various stations differed widely from the normal, the greatest deficiencies being 9.3° at Frisco, Utah. The excesses were, as a rule, much less pronounced, only a few places, principally in Oregon and in the mountain districts of Utah, reporting excesses in temperature, and these were moderate in amount.

During the first decade the weather was unusually warm in most localities, and many stations reported their highest temperatures during this period. Cooler weather prevailed over the greater portion of the district for the remainder of the month with a period of quite low temperatures extending from the 21st to the 26th.

Maximum temperatures above 80° occurred at all, except a few of the more elevated stations. The lowest maximum temperature reported was 70° at Halleck, Nev., on the 1st. Maximum temperatures of 90° or more, occurred at over one-fourth of the stations, while the highest for the month was 98° at Jean, Nev., on the 2d and at Battle Mountain, Nev., on the 3d.

Minimum temperatures of 32°, or lower, were recorded at most stations during the last two decades of the month, although a few stations reported temperatures below freezing during the first decade. The lowest temperatures generally occurred from the 21st to the 25th. There were several minima of 20° or lower reported at exposed points in the mountains. The lowest minimum for the month was 16° at Carlin, Nev.

Killing frosts were reported generally in Nevada on the 12th, and at several stations in Utah on the 11th and 12th, but general killing frosts did not occur in Utah until the 22d.

PRECIPITATION.

Precipitation was unusually heavy, averaging for the district 1.25 inches, which was 0.62 inch above the normal. It was above normal at almost every station, and where below normal the deficiencies were very small.

Unusually large amounts fell over most of Utah and Nevada, and several stations reported two and three times the average amount. In Utah there were only a few previous Septembers with more moisture.

The greatest monthly amount reported was 3.75 inches at Silver Lake, Utah; while the least was none at Carlin, Leetville, McAffees Ranch, and Tahoe, all in Nevada. The greatest amount in twenty-four hours was 2 inches at Jean on the 27th and at Humboldt on the 28th, both places being in Nevada.

The precipitation was very unevenly distributed, due to the large number of thunderstorms.

The rainy condition of the last few days in August extended over the first decade of September, the heaviest rain of the month falling, as a rule, on the 1st. The storm of the last of August and the first of September was unusually severe, causing considerable damage to property, and one life was reported lost.

From the 8th to the 25th droughty conditions prevailed in all States except in Utah and Wyoming; in Utah some rain fell on the 11th and in Wyoming on the 11th and 21st.

The next rainy period extended from the 25th to the 30th, but the rains were usually light, although at Odgen, Utah, 1.39 inches fell on the 29th, and in Nevada five stations reported amounts over 1 inch on the 27th and 28th.

Hail fell at Cherry Creek and Mina, Nev., on the 28th.

One inch of snow fell at Evanston, Wyo., and 2.5 inches at Fries Summit and Silver Lake, Utah.

FLOODS IN UTAH DURING AUTUMN OF 1909.

The late summer and autumn of 1909 was the wettest harvest season ever known in southern and eastern Utah. Rains came and persisted for days, and at times for weeks, gutting the mountain sides, swelling the streams, soaking the fields, and littering them with debris. During the harder rains, trickling creeks became raging torrents clogged with debris, dealing destruction throughout their crooked lengths within a few hours, owing to the steepness and hardness of the watershed slopes. The resulting inconvenience and financial loss were hard to measure, but probably \$75,000 was kept from the farmers because of the grain and hay that were spoiled, and possibly \$50,000 will have to be paid out in labor and money before the property damage can be entirely cleared.

The culmination of the rainy period was definitely marked on August 30-31 and September 1, during which time more than the monthly normal precipitation fell at many places. As a result of these unprecedented rains damage by floods was quite widespread. Unthrashed grain in the fields was soaked disastrously and was not permitted to dry; mountain roads were obliterated, and cross-country roads were rendered impassable; streams were dangerously turbulent, cutting new channels, wrecking bridges, and carrying away large quantities of property. Irrigation systems were ruined, headgates and dams being demolished, canals broken and laterals choked with rubbish.

Scarcely a community in Utah east of the Wasatch Mountains escaped without damage except those far from the mountains.

The post surgeon at Fort Duchesne, Uinta County, reported the loss of a Government building by the flood waters of the Duchesne River, the loss of several bridges over the turbulent tributary streams, and the loss of the life of the mail carrier, who had attempted to ford the stream near Myton. The observer at Vernal, Uinta County, estimates that 3,000 tons of hay valued at \$6 per ton were destroyed, and that 1,500 bushels of grain worth \$1 per bushel were ruined. The mountain roads near Vernal were damaged to the extent of \$2,000. A bridge which cost \$600 was washed out on the road to Brush Creek Mountain, 3 miles north of Vernal, and another bridge on the same road at the mouth of Steinaker Draw, worth \$500, was entirely destroyed, and a number of good bridges on the Vernal-Roosevelt road are gone, entailing a loss of about \$900.

The cooperative observer at Emery, Emery County, who measured 4.09 inches of precipitation in three days, reports great damage to all interests in that locality. The county road bridge, the headgates of the Emery Canal and Reservoir Company, and also the headgates of the Independent Canal Company, were completely washed away, hardly a piece of timber remaining. Both canals were washed, and broken more or less, from one end to the other. One small house was carried away and several small animals were drowned. Many canyon roads were entirely washed away and in their place were ravines from 5 to 20 feet deep.

At Tropic, Garfield County, the canyon bridge was carried away, and there was some damage to canals and crops. Pinto, Washington County, reports the hay crop damaged from \$800 to \$1,000, and an additional loss of \$200 to dams and ditches. Ranch, Kane County, according to the observer, suffered damage of about \$120 to bridges, \$900 to hay and grain, \$100 to fencing, and \$200 by washing and carrying litter into the fields. At Hite, Garfield County, the Colorado River rose seven feet during the first ten days of September, believed by the observer to be due to the flood water from the Fremont, San Rafael, and Price rivers. In the Rio Virgin Valley, in Washington and Kane counties, the floods of the last thirty-six hours of August caused at least \$1,000 damage to crops and highways. In Mill Canyon, a tributary to the Santa Clara River in Washington County, the observer measured 4.20 inches of rain on August 30 and 31. Both creeks in Grass Valley rose higher than they have been during the thirty years that the valley has been occupied by settlers. The roads and mill property destroyed were valued at about \$800, there being only about one-third of the roads remaining.

Owing to the general barometric conditions in the Southwest during these heavy August-September rains—a large ill-defined, but comparatively deep, low pressure area being located well inland from the southern Pacific coast—the flood conditions were produced only to the east of the Wasatch Mountains in Utah, though good rains were general over the entire State at that time. Floods were more or less damaging in all the valleys lying in the southern Wasatch Mountains, though these were caused principally by the heavy rains near the headwaters of the streams.

SMUDGE POT TEST.

A test was made at the Utah State Fair Grounds at Salt Lake City by the State Horticultural Inspector, Mr. Joseph Taylor, and the writer on four sets of smudge pots submitted in contest.

Since it was impracticable to conduct the tests in an orchard, the pots were arranged in an open field, and were spaced as recommended by the exhibitors. In regular orchard practise the pots would have been much more efficient, as the foliage would have acted more or less like a blanket, conserving and absorbing the heat produced by the pots.

The following plan shows just how the pots were placed.

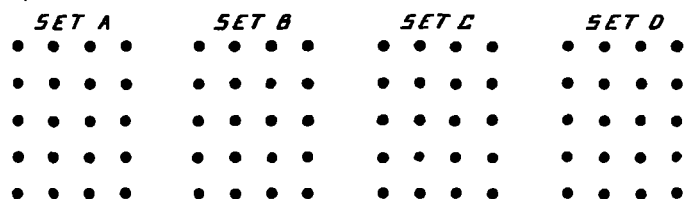


FIG. 1.

Each set of pots occupied about one-fifth of an acre, and each set were about 64 feet apart. The pots of the individual sets spaced about 20 feet apart. The different sets were designated A, B, C, and D. In this article it is the intent to give an idea of how the temperature conditions may be controlled by these protective devices rather than show the efficiency of any particular make of pot.

Thermometers were placed in the center of each smudged area, and another well outside of the smudged zone and to the windward. The tests were carried through two nights, and the results are shown in the following tables.

Temperature readings were taken every half hour from the time of beginning the test until just before sunrise. It was not practicable to continue the readings longer as no thermometer shelters were used.

The results showed that on the first night the temperature within the smudged areas was kept on an average of 4.7° higher than the temperature outside. But on the second night

Set A.

Time.	First night. Pots lighted at 12:55 a. m.			Time.	Second night. Pots lighted at 12:45 a. m.		
	Outside reading.	Inside reading.	Degrees raised.		Outside reading.	Inside reading.	Degrees raised.
1:30 a. m.	28.0	32.0	4.0	1:00 a. m.	40.5	43.5	3.0
2:00 a. m.	28.5	31.0	2.5	1:30 a. m.	40.0	41.0	1.0
2:30 a. m.	26.5	30.5	4.0	2:00 a. m.	39.0	41.0	2.0
3:00 a. m.	27.0	32.5	5.5	2:30 a. m.	40.0	41.5	1.5
3:30 a. m.	29.0	33.5	4.5	3:00 a. m.	39.0	41.0	2.0
4:00 a. m.	28.0	31.0	3.0	3:30 a. m.	38.0	40.0	2.0
4:30 a. m.	27.0	31.5	4.5	4:00 a. m.	38.0	41.0	3.0
5:00 a. m.	30.0	33.5	3.5	4:30 a. m.	38.0	40.0	2.0
5:30 a. m.	29.5	33.5	4.0	5:00 a. m.	39.5	40.0	0.5
6:00 a. m.	29.5	33.0	3.5	5:30 a. m.	38.5	40.0	1.5
6:30 a. m.	28.0	32.0	4.0	6:00 a. m.	38.0	39.5	1.5
6:45 a. m.	27.5	33.0	5.5	6:30 a. m.	38.0	38.5	0.5
				6:45 a. m.	38.0	39.5	1.5

Set B.

Time.	First night. Pots lighted 12:55 a. m.			Time.	Second night. Pots lighted 12:45 a. m.		
	Outside reading.	Inside reading.	Degrees raised.		Outside reading.	Inside reading.	Degrees raised.
1:30 a. m.	28.0	33.5	5.5	1:00 a. m.	40.5	45.5	5.0
2:00 a. m.	28.5	33.0	4.5	1:30 a. m.	40.0	43.5	3.5
2:30 a. m.	26.5	33.0	6.5	2:00 a. m.	39.0	42.0	3.0
3:00 a. m.	27.0	33.0	6.0	2:30 a. m.	40.0	41.5	1.5
3:30 a. m.	29.0	35.0	6.0	3:00 a. m.	39.0	41.0	2.0
4:00 a. m.	28.0	32.0	4.0	3:30 a. m.	38.0	42.0	4.0
4:30 a. m.	27.0	32.0	5.0	4:00 a. m.	38.0	41.0	3.0
5:00 a. m.	30.0	34.0	4.0	4:30 a. m.	38.0	40.0	2.0
5:30 a. m.	29.5	34.0	4.5	5:00 a. m.	39.5	41.0	1.5
6:00 a. m.	29.5	33.5	4.0	5:30 a. m.	38.5	41.0	2.5
6:30 a. m.	28.0	32.0	4.0	6:00 a. m.	38.0	40.0	2.0
6:45 a. m.	27.5	35.5	8.0	6:30 a. m.	38.0	40.0	2.0
				6:45 a. m.	38.0	40.5	2.5

Set C.

Time.	First night. Pots lighted at 12:55 a. m.			Time.	Second night. Pots lighted at 12:45 a. m.		
	Outside reading.	Inside reading.	Degrees raised.		Outside reading.	Inside reading.	Degrees raised.
1:30 a. m.	28.0	33.0	5.0	1:00 a. m.	40.0	41.0	1.0
2:00 a. m.	28.5	32.0	3.5	1:30 a. m.	40.0	41.5	1.5
2:30 a. m.	26.5	33.0	6.5	2:00 a. m.	39.0	41.0	2.0
3:00 a. m.	27.0	32.0	5.0	2:30 a. m.	40.0	41.0	1.0
3:30 a. m.	29.0	33.0	4.0	3:00 a. m.	39.0	39.5	0.5
4:00 a. m.	28.0	32.0	4.0	3:30 a. m.	38.0	40.5	2.5
4:30 a. m.	27.0	33.0	6.0	4:00 a. m.	38.0	40.0	2.0
5:00 a. m.	30.0	33.5	3.5	4:30 a. m.	38.0	40.0	2.0
5:30 a. m.	29.5	33.0	3.5	5:00 a. m.	39.5	41.0	1.5
6:00 a. m.	29.5	34.0	4.0	5:30 a. m.	38.5	40.0	1.5
6:30 a. m.	28.0	32.5	4.5	6:00 a. m.	38.0	40.0	2.0
6:45 a. m.	27.0	33.0	6.0	6:30 a. m.	38.0	39.0	1.0
				6:45 a. m.	38.0

Set D.

Time.	First night. Pots lighted at 12:55 a. m.			Time.	Second night. Pots lighted at 12:45 a. m.		
	Outside reading.	Inside reading.	Degrees raised.		Outside reading.	Inside reading.	Degrees raised.
1:30 a. m.	28.0	32.0	4.0	1:00 a. m.	40.5	43.0	2.5
2:00 a. m.	28.5	32.0	3.5	1:30 a. m.	40.0	41.5	1.5
2:30 a. m.	26.5	32.5	6.0	2:00 a. m.	39.0	41.5	2.5
3:00 a. m.	27.0	32.0	5.0	2:30 a. m.	40.0	41.0	1.0
3:30 a. m.	29.0	35.0	6.0	3:00 a. m.	39.0	41.0	2.0
4:00 a. m.	28.0	33.0	5.0	3:30 a. m.	38.0	42.0	4.0
4:30 a. m.	27.0	32.5	5.5	4:00 a. m.	38.0	42.0	4.0
5:00 a. m.	30.0	34.0	4.0	4:30 a. m.	38.0	41.0	3.0
5:30 a. m.	29.5	33.0	3.5	5:00 a. m.	39.5	41.5	2.0
6:00 a. m.	29.5	34.0	4.5	5:30 a. m.	38.5	40.0	1.5
6:30 a. m.	28.0	34.0	6.0	6:00 a. m.	38.0	39.0	1.0
6:45 a. m.	27.5	34.0	6.5	6:30 a. m.	38.0	38.0	0.0
				6:45 a. m.	38.0	38.0	0.0

the temperature inside the smudged areas was raised only 1.9°. This great difference was due to the fact that the wind during the first night was very light, probably averaging less than 2 miles an hour, while on the second night the wind averaged

about 8 miles per hour. During the first night the temperature went so low that fruit would have been damaged, were the fruit inside the smudged areas it would have been saved. During the second night the fruit would have been in no danger, but the experiment showed that even with the comparatively high wind, the temperature was raised very nearly 2° .

EARTHQUAKE AT SALT LAKE CITY, UTAH.

At this city at 7:41 p. m. many residents felt a distinct earthquake shock which is reported to have been the most violent ever experienced in this section. The vibrations were noticed

only for a minute, and generally by people who were either reclining or sitting. The shocks were strong enough to swing doors, rattle windows, and chandeliers. The foregoing record was made at the University of Utah, situated at the eastern outskirts of the city.

The University of Utah maintains the only seismological station in the inter-mountain region. The above record was made by one of the two earthquakes which visited Salt Lake City Tuesday evening at 7:41 and 8:24, October 5. The disturbance was caused by a slipping of great crustal blocks at the western face of the Wasatch Mountains and passing north and south immediately east of Salt Lake City and Ogden.

Dr. F. J. Pack of the university said that in all probability the quake was due to the slipping of a fault on the western face of the Wasatch Mountains. The press reports showed that the disturbance was felt as far north as Preston, Idaho, and as far south as Salt Lake City, Utah. The most violent shocks were observed at Malad, Logan, and Ogden. The fault above alluded to extends along the eastern edge of the city near Fort Douglas, then swings to the northwest above Capitol Hill, and then rounds the point of the mountain beyond Warm and Hot Springs.

A second shock less violent than the first was felt at 8:25 p. m. on the same day.

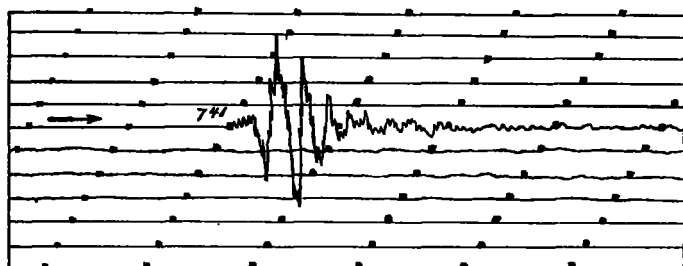


FIG. 2.—Earthquake record made at the University of Utah.

TABLE 1.—Climatological data for September, 1909. District No. 10, Great Basin.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Wyoming.																			
Border	Uinta	6,085	7	52.9		81	25	17	23	50	3.27		1.90		6	13	8	9	S. W. Condron
Evanston	do	6,380	13	52.3	- 0.6	77	9†	19	23	45	1.22	+ 0.27	0.54	1.0	6	16	11	3	Frank Tucker
Idaho.																			
Geneva	Bear Lake		2								1.40		0.76	0.0	6	14	14	2	F. W. Boehme
Grace	Bannock	5,400	3	57.5		83	27	23	23	52	1.63		0.52	0.0	12	18	10	2	E. A. Ekern
Oxford	do	4,750	2								2.60		0.63	0.0	9	15	11	4	Edwin Smith.
Paris	Bear Lake	5,946	13																John Norton.
Stone	Oneida	4,520	2			90	3†				1.81		0.69	0.0	4	22	4	4	Thos. W. Roe.
Weston	do	4,610	12	58.5	+ 0.6	86	25	25	22	46	2.08	+ 1.40	0.63	0.0	8	15	4	11	Wm. T. Chatterton.
Utah.																			
Annabella	Sevier	5,250	4								0.64		0.20	0.0	6				J. W. Fairbanks.
Beaver	Beaver	6,000	6	57.8		78	24	32	22†	40	1.83		0.53	0.0	7	14	11	5	James Connell.
Black Rock	Millard	4,972	9																A. H. Cassell.
Blacksmiths Fork	Cache	5,500																	U. S. Forest Service.
Card Canyon	do	5,000																	Do.
Castle Rock	Summit	6,244	6								1.28	+ 0.61	0.50		5	14	11	5	David Moore.
Cedar City	Iron	5,750	4																J. M. Foster.
Corinne	Boxelder	4,240	39	63.6	- 1.7	92	3†	31	23†	53	1.97	+ 1.31	0.70	0.0	5	14	9	7	A. C. Murphy.
Coyote	Garfield		8																Mrs. E. Clayton.
Deseret	Millard	4,541	15	61.0	- 0.8	89	1	27	32	51	0.39	- 0.39	0.18	0.0	5	20	4	6	S. W. Western.
Enterprise (near)	Washington	4,270	1								2.78		0.63	0.0	6	14	10	6	John Day.
Farmington	Davis	4,267	9	59.2	- 0.5	83	18	30	23	48	1.39		0.53	0.0	6	20	10	0	Charles Boylin.
Fillmore	Millard	5,100	19	63.6	+ 2.1	90	24	29	23	48	1.81	+ 0.86	0.85	0.0	5				J. J. Starley.
Frisco	Beaver	7,318	15	58.8	- 9.3	79	10†	33	22	32	1.14	+ 0.45	0.24	0.0	8				E. R. Smyth.
Garland	Boxelder	4,350		58.8		86	25	31	21	45	3.02		0.87	0.0	9	16	11	3	Harry B. Shaw.
Garrison	Millard		6	60.1		89	25	25	22	41	2.00		0.85	0.0	5	19	3	8	E. M. Smith.
Golden Reef	Beaver	7,000									1.07		0.39	0.0	6				D. W. Woodard.
Government Creek	Tooele	5,277	9	59.2	- 2.1	82	2†	27	22	40	1.24		0.42	0.0	5	17	10	3	Walter James.
Heber	Wasatch	5,606	16	55.6	+ 0.4	80	2†	22	23	54	0.71	- 0.27	0.22	0.0	6	17	12	1	John Crook.
Henefer	Summit	5,301	10	55.6	+ 1.0	83	24†	20	23	58	1.58		0.50	0.0	7	12	13	5	Wm. Brewer.
Hoyts Canyon	do	7,400									1.43								James Woolstenhulme.
Huntsville	Weber	5,100	14								1.75	+ 0.88	0.48	0.0	7	15	10	5	Lars Petersen.
Ibapah (near)	Tooele	7,500	4																E. S. Gamwell.
Kanosh	Millard	5,250	1								0.36		0.12	0.0	5				Geo. Crane.
Kelton	Boxelder	4,230	31	58.2	- 2.9	83	3	28	21	42	2.05	+ 1.64	0.65	0.0	6	3	26	1	F. W. Klock.
Levan	Juas	5,010	19	59.2	- 0.9	81	25	30	12†	40	0.81	- 0.45	0.47	0.0	8	21	5	4	Wm. Brown.
Logan	Cache	4,507	18	60.9	- 0.5	83	25	33	22	31	2.28	+ 1.21	0.62	0.0	7				State Agricultural College
Lucin	Boxelder	4,504	5	54.6		88	1	18	23	54	0.20		0.10	0.0	6	10	11	9	C. J. Burke.
Lund	Iron	5,086	1																M. E. Smith.
Manti	Sanpete	5,575	15	54.5	- 5.6	72	1	29	24	34	1.85	+ 0.71	0.60	0.0	7	11	5	14	J. M. Anderson.
Marion	Summit	6,750	5								2.50		0.70	0.0	7	10	5	15	James Woolstenhulme.
Marysville	Plute	6,180	10	57.8	+ 0.4	84	25	26	23	50	1.52	+ 0.21	0.87	0.0	8	13	9	8	John W. Henry.
Meadowville	Rich	6,200	10	57.6	- 0.3	78	28	23	22	43	2.40	+ 1.35	0.40	0.0	8	16	4	10	J. S. Moffat.
Millford	Beaver	4,962	5	54.8		78	1†	24	29	44	0.03		0.02	0.0	3	21	4	5	C. M. Temple.
Millville	Cache	4,848	14								4.05	+ 3.03	1.79	0.0	12				Fred Yeates.
Minersville	Beaver	5,070	12								0.78	+ 0.23	0.23	0.0	6				Geo. Roberts.
Modena	Iron	5,479	9	57.6	- 2.6	79	20	30	23	43	1.21		0.32	0.0	5	15	9	6	U. S. Weather Bureau
Morgan	Morgan	5,080	6	56.4		85	25	24	23	43	3.62		1.35	0.0	6	9	13	3	W. Visek.
Moroni	Sanpete	5,519	1								0.53		0.49	0.0	2	3	27	0	B. F. Eliason.
Mount Nebo	Utah	4,650	8	61.8		85	25	31	22	38	2.27		0.90	0.0	6	18	10	2	D. C. Walkey.
Mount Pleasant	Sanpete	5,859	17	59.2	- 2.2	82	3	27	22	44	1.12	+ 0.11	0.92	0.0	4	23	3	4	Jane Martin.
Nephi	Juas	6,059	6								1.15		0.41	0.0	7	24	3	3	A. Madsen.
Nephi (near)	do	6,059									0.68		0.15	0.0	8	8	20	2	S. R. Boswell.
Oak City	Millard	4,900	5																Jos. Finlison.
Ogden (1)	Weber	4,310	8	60.6		83	25	35	18	33	2.70		1.00	0.0	7	18	10	2	Enoch Farr.
Ogden (2)	do	4,310	39	63.6	- 1.7	83	4†	44	26		3.58	+ 1.85	1.39	0.0	4	22	4	4	W. H. Chevers.
Panguitch	Garfield	6,560	1																F. C. Syrett.
Panguitch Lake	do	9,000									0.80		0.60	T.	2	8	13	9	James E. Prince.
Park City	Summit	7,800	12	60.4	+ 6.1	89	3	25	23	53	1.30	+ 0.44	1.10	0.0	2	16	14	0	Irvine Evans.
Parowan	Iron	5,970	18	59.9	- 0.2	85	22†	30	25	44	1.16	+ 0.12	0.50	0.0	6	20	0	10	Scott Matheson.
Payson	Utah	4,637	6								1.56		0.50	0.0	6	12	10	8	D. L. Coombs.
Pinto	Washington	5,907	12	54.6	- 1.5	78	16	25	22	46	2.46	+ 1.08		0.0	7	16	7	7	John H. Harrison.
Promontory	Boxelder	4,913	38																F. C. Houghton.
Provo	Utah	4,532	17	60.1	- 0.4	86	24	26	22	54	1.31	+ 0.73	0.50	0.0	5	8	21	1	James A. Oliver.
Randolph	Rich	6,443	6																Wm. Rex.
Richfield	Sevier	5,350	19	61.3	+ 3.8	88	4	29	22	55	1.08	+ 0.56	0.84	0.0	3	20	0	10	Joseph J. Jensen.
Richins Summit	Summit	6,500									1.56		0.92	0.0	3				Ernest H. Brewer.
Saltair	Salt Lake	4,220	6	63.0		83	10	41	22	35	1.92		0.80	0.0	9				E. J. Bench.
Salt Lake City	do	4,366	35	63.2	- 1.9	84	3	38	22	35	1.55	+ 0.70	0.43	0.0	6	12	16	2	U. S. Weather Bureau.
Scipio	Millard	5,260	14	57.8	- 1.6	85	24	20	22	51	1.16	+ 0.16	0.63	0.0	6	14	7	9	Thos. Memmott.
Silver Lake	Salt Lake		1	50.3		73	2	21	22	41	3.75		0.73	2.5	10	13	9	8	N. S. Fetherolf.
Soldier Summit	Utah	7,474	17																Agent, D. & R. G. Ry.
Spanish Fork Canyon	do			62.9		84	10	36	22	39	1.86		0.50	0.0	7	21	4	5	U. S. Reclamation Service
Thistle	do	5,075	17																Agent, D. & R. G. Ry.
Tooele	Tooele	4,900	13	60.6	- 3.0	84	25	33	23	43	2.54	+ 1.67	0.70	0.0	9	5	9	16	E. A. Bonelli.
Utah Lake Pump'g Sta.	do	4,500	4								1.36		0.45	0.0	7	18	8	4	W. A. Knight.
West Canyon	Tooele	7,800									1.74		0.65	0.0	5				Walter James
Oregon.																			
Ana River																			

TABLE 1.—Climatological data for September, 1909. District No. 10—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Nevada—Cont'd.																				
Columbia.....	Esmeraldo.....	5,750	3	63.6		86	20	35	22	38	2.47		1.52	0.0	4	17	10	3	se.	A. Booth.
Dutton.....	Elko.....	5,100	2	54.0		95	15	18	21	67	0.80		0.70	0.0	2	15	7	8	sw.	Golconda Cattle Co.
Elko.....	do.....	5,342	39	56.9	+ 0.1	95	3	21	22	68	0.23	- 0.01	0.14	0.0	2	14	5	11	s.	Agent, So. Pac. Co.
Ely.....	White Pine.....	6,421	19	57.2	+ 2.0	82	21	26	22	48	2.46	+ 1.88	0.70	0.0	7	18	10	3	w.	G. C. Hunting.
Eureka.....	Eureka.....	6,500	7	59.0		82	10†	24	22	43	0.68		0.47	0.0	5	19	5	6	s.	Clay Simms.
Fallon.....	Churchill.....	3,965	5	62.2		90	9	31	22	49	0.21		0.20	0.0	2	15	6	9	w.	U. S. Reclamation Service
Fernley.....	Lyon.....	4,200	2	65.2		91	18	34	18†	57	0.77		0.77	0.0	1	22	5	3	w.	Do
Gardnerville.....	Douglas.....	4,830	10	60.8		90	17	25	30	53	0.01		0.01	0.0	1	16	8	6	se.	William Dangberg.
Geyser.....	Lincoln.....		5																	Mrs. J. F. Wambolt.
Golconda.....	Humboldt.....	4,697	31	58.8	- 2.8	85	3†	32	21	48	0.80	+ 0.50	0.60	0.0	2	9	14	7	w.	Agent, So. Pac. Co.
Halleck.....	Elko.....	5,631	17			70	1				0.62	+ 0.27	0.25	0.0	3	1	17	12	w.	Do.
Hamilton.....	White Pine.....	7,977	3																	George Allen.
Humboldt.....	Humboldt.....	4,236	39	62.4	+ 1.1	86	9	30	22	42	2.01	+ 1.83	2.00	0.0	2	21	3	6	nw.	Agent, So. Pac. Co.
Jean.....	Clark.....	2,074	2	73.3		98	2	46	22	42	2.03		2.00	0.0	2	21	2	7		Agent, Salt Lake Route.
Leeville.....	Churchill.....	4,020	3	64.2		92	9	31	23	47	0.00		0.00	0.0	0	23	7	0	w.	U. S. Reclamation Service
Lewers Ranch.....	Washoe.....	5,500	22	59.5	- 0.8	86	4	34	11†	45	0.50	- 0.29	0.30	0.0	2	16	13	1		Ross Lewers.
Lovelock.....	Humboldt.....	3,977	17	62.0	- 2.1	96	15	32	21†	55	0.47	+ 0.22	0.30	0.0	4					John S. Case.
McAfee's Ranch.....	Esmeraldo.....	4,835	6	59.6		87	10	25	23		0.00		0.00	0.0	0	16	4	2		G. A. McAfee.
Millet.....	Nye.....		2	58.4		85	10	25	23	55	2.38		1.00	0.0	4	17	9	4	s.	Fred J. Jones.
Mina.....	Esmeraldo.....	4,600	3	64.8		93	9	33	22	51	0.02		0.01	0.0	2	14	6	10	sw.	Agent, So. Pac. Co.
Palmetto.....	do.....	6,780	20																	Isaac McConnell.
Potts.....	Nye.....	6,990	17	53.4	- 2.3	80	9	20	22	49	0.35	+ 0.05	0.15	0.0	3	8	10	12	n.	Miss Mamie Potts.
Quinn River Ranch.....	Humboldt.....	4,850	8	58.8		92	15	20	18†	60	0.85		0.65	0.0	4	10	6	8	sw.	F. M. Payne.
Reno.....	Washoe.....	4,532	39	60.8	+ 1.1	88	8	33	30	47	0.34	+ 0.07	0.20	0.0	4	20	10	0	w.	U. S. Weather Bureau.
Soda Lake.....	Churchill.....	4,534	3	65.4		92	9	33	12†	42	0.70		0.50	0.0	2	18	8	4	w.	U. S. Reclamation Service
Tecoma.....	Elko.....	4,812	32	58.8	- 1.6	94	1	18	23	57				0.0		13	7	10		Agent, So. Pac. Co.
Tonopah.....	Nye.....	6,090	3	62.0	+ 3.9	81	10	39	22	29	2.07	+ 1.57	1.76	0.0	4	17	12	1	se.	U. S. Weather Bureau.
Wabuska.....	Lyon.....	4,347	7	58.0		84	17†	24	22	54	0.20		0.20	0.0	1	18	8	4	ne.	J. G. Young.
Wells.....	Elko.....	5,631	38	56.8	- 1.3	91	4	22	22	56	0.21	+ 0.07	0.06	0.0	6	19	4	7	sw.	Agent, So. Pac. Co.
Winnemucca.....	Humboldt.....	4,432	31	58.8	- 1.7	90	9	26	22	50	0.64	+ 0.30	0.47	0.0	5	20	4	6	ne.	U. S. Weather Bureau.

* Precipitation included in that of the next measurement.

* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

|| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 2.—Daily precipitation for September, 1909. District No. 10, Great Basin.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Wyoming.																																		
Border	Bear	1.90	.65	T.	.10			T.	.14													.09						T.				.39	3.27	
Evanston	do.	.25			.08	.20			.09	.06		.54																					1.22	
Idaho.																																		
Geneva	Bear	.76		.32		.10			.08	.06		.08																					1.40	
Grace	do.	.52	.14	.06	T.	.17	.11	.01	.08		.07	.05															.18			.22	.02		1.63	
Oxford	do.	.49	.63			.63		.15	.05			.13	.01														.15			.45			2.69	
Paris	do.																																	
Stone	Deep Creek	.65			.42		T.	.05			T.																			.69			1.81	
Weston	Bear	.63	.22			.21		.35		.04	.28																		.05	.30			2.08	
Utah.																																		
Annabella	Sevier				.20	.13	.13	.06		.05	.07																						0.64	
Beaver	do.	.46			.58	.05	.10				.23															.37	.05	T.					1.83	
Black Rock	do.																																	
Blacksmiths Fork	Bear																																	
Card Canyon	do.																																	
Castle Rock	Weber	.31			.22	.20					.50																							1.28
Cedar City	Desert	*																																
Corinne	Bear	*	.40					T.	.20	T.																			.70	.67				1.97
Coyote	Sevier																																	
Deseret	do.				T.		.02				.04																	.18	.05		.10			0.39
Enterprise (near)	Desert	.62				.36																					*	*	1.15		.63			2.76
Farmington	Great Salt Lake	.18			.53	.20					.35																.03							1.39
Fillmore	Sevier	.56			.16		.85	T.				.02																					1.81	
Frisco	Desert	.22				.15						.05																					1.14	
Garland	Bear	.87	.72	.03		.28		.40			.04	.08																.17	.18	.24	.05	.08		3.02
Garrison	Desert	.45			.10	T.	T.	.25	.05																					.85	.25	.35		2.00
Golden Reef	do.				.07	.03																								.39	.28			1.07
Government Creek	do.	.42			T.	.10					.30	T.																		.12		.40		1.24
Heber	Jordan	.05			.22			.12	.05			.22	T.																				.05	0.71
Henefer	Weber	.38			*.10	.40		T.*	.05	*		*.50	.05					T.	*									*	T.*		*.10		1.58	
Hoyts Canyon	do.																											*						1.43
Huntsville	do.	.16			T.	.48		.09	*			.31																.17	.19		.35	*		1.75
Ibapah (near)	Desert																																	
Kanosh	Sevier				.12						.05																							0.36
Kelton	Great Salt Lake	.60				.30		*	.50																									2.05
Levan	Sevier	.47			.03		.03	.01	.02			.12																				.65		0.81
Logan	Bear	.21	.45			.62	.34					.26	.14																				2.28	
Lucin	Desert	.10	.02	T.		.03	T.	T.	T.	.02																				.01	T.	T.	.02	0.20
Lund	do.																																	
Manti	Sevier	.60	.05		.50	T.	.34	.12	.04		T.	.20																					1.85	
Marion	Weber	.60			.70	.37		.04	T.	.40		.37																					2.80	
Marysville	Sevier	.87			.03	.28	.08	.15				.05																						1.75
Meadowville	Bear	.30	.25			.25	.40	.30	.30		T.	.40																					2.40	
Millford	Sevier				.02						.01																							0.03
Millville	Bear	.25	.75		.06	.22		1.79	.03		.06	.27	.01																				4.05	
Minersville	Sevier				T.		.14	.04				.14																					0.78	
Modena	Desert	1.00	.35		.02		.13	T.				T.																					1.21	
Morgan	Weber	.49			T.		T.	T.	T.		T.	.04																						3.62
Moron	Sevier	.63			.90			.43				.11																						0.53
Mount Nebo	Jordan	.92			T.		T.	.04	.04			.12																					2.27	
Mount Pleasant	Sevier	.41	.03		.10		.17					.20																						1.12
Nephi	Jordan		.02		.07		.03	.11	.15			.15																						1.15
Nephi (near)	do.																																	0.68
Oak City	Sevier																																	
Ogden (1)	Weber	.89				.24		.06																										2.58
Ogden (2)	do.	1.00				.29		.10	.05			.38																						2.70
Pangutich	Sevier																																	
Pangutich Lake	do.	T.			T.	T.	T.	T.			T.	T.																						0.80
Park City	Weber				1.10					.20																								1.30
Parowan	Desert			.05			.07				.08																							1.16
Payson	Jordan	.35			T.	.11		.38				.50																						1.56
Pinto	Desert	.39				.50	.11					.01																						2.46
Promontory	Great Salt Lake																																	
Provo	Jordan	.40			.50			T.				.25																						1.31
Randolph	Bear																																	

TABLE 2.—Daily precipitation for September, 1909. District No. 10—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Nevada—Cont'd.																																	
Carson Dam.....	Carson.....						T.																					.07	.16				0.23
Cherry Creek.....	Humboldt.....					T.	T.	.04			T.																.30	.65					0.99
Clover Valley.....	do.....				.32						.02																.29	.50					1.13
Cobre.....	do.....	.40	.03	T.	.35	.04	.03																			.12	.45	.11					1.53
Columbia.....	Desert.....				.02	T.	.07																				*	.86	1.52				2.47
Dutton.....	Humboldt.....	.10					.70																										0.80
Elko.....	do.....					.08																					.14						0.22
Ely.....	do.....				.05	.60	.23	.05	T.																		.70	.01	.82				2.46
Eureka.....	do.....						.06																			.01	.08	.06	.47				0.68
Fallon.....	Carson.....	.01																										T.	.20	T.			0.21
Fernley.....	Truckee.....						T.																						.77				0.77
Gardnerville.....	Carson.....																												.01				0.01
Geyser.....	Humboldt.....																											T.					T.
Glenbrook.....	Truckee.....																																
Golconda.....	Humboldt.....	.20																											.60				0.80
Halleck.....	do.....						.25	.12																			.25						0.62
Hamilton.....	do.....																																
Humboldt.....	do.....	.01																															
Jean.....	Desert.....				.03																												
Letzville.....	Carson.....																																
Lewer's Ranch.....	Truckee.....				T.	.30	T.																										
Lovelock.....	Humboldt.....	.30	.04																														
McAfee's Ranch.....	Desert.....																																
Millett.....	Reese.....	1.00					.60																				.50	.28					
Mina.....	Desert.....																																
Mount Rose Ranch.....	Truckee.....				T.	T.	T.																				T.	.01	.01				
Palmetto.....	Desert.....																																
Paradise Valley.....	Little Humboldt.....																																
Potts.....	Reese.....	.15			.05			T.																									
Quinn River Ranch.....	Humboldt.....	.12			T.		.04																										
Reno.....	Truckee.....	.01			T.	T.	.20																										
Smith.....	West Walker.....				T.	T.	T.																										
Soda Lake.....	Carson.....	.50			T.	T.																											
Sweetwater.....	East Walker.....																																
Teocoma.....	Humboldt.....																																
Tonopah.....	Desert.....				.01	.10	T.																										
Wabuska.....	Walker.....			T.	T.	T.	T.																										
Wells.....	Humboldt.....		.02		.04		.04	.03																									
Willow Point.....	Little Humboldt.....																																
Winnemucca.....	Humboldt.....	.05				.01	T.																										
Yerington.....	Walker.....																										.01	.23	.34				

TABLE 3.—Maximum and minimum temperatures at selected stations, September, 1909. District No. 10, Great Basin.

Date.	Wyoming.				Weston, Idaho.		Utah.																				Burns, Oreg.		Elko, Nev.	
	Border.		Evanston.				Corinne.		Deseret.		Government Creek.		Marysvale.		Modena.		Ogden.		Parowan.		Provo.		Salt Lake City.							
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1...	72	55	70	60	76	60	84	62				76	55	77	58	72	55	74	61	74	51	81	61	79	62	85	51	92	31	
2...	79	48	75	40	80	52	87	56				78	54	82	45	75	47	76	61	74	52	84	61	82	63	79	41	90	34	
3...	76	44	76	47	82	52	93	56				82	50	82	47	78	46	77	59	74	51	84	53	84	64	77	45	95	27	
4...	74	42	68	44	82	49	90	54				82	48	74	48	70	51	77	66	73	50	83	49	82	60	80	48	81	47	
5...	69	42	65	50	72	57	92	56				73	52	70	50	75	47	69	57	74	48	75	59	70	59	84	46	80	50	
6...	72	47	70	41	71	47	91	52				74	46	71	51	71	50	72	55	75	46	76	53	75	56	86	44	78	44	
7...	71	43	65	43	70	49	81	58				76	49	71	42	76	45	71	55	75	45	80	52	74	56	85	38	76	44	
8...	70	42	67	41	75	50	84	52				76	46	74	42	77	46	73	55	74	47	79	48	75	55	84	44	82	40	
9...	74	36	77	39	80	45	87	56				79	55	77	39	77	44	74	55	75	43	79	47	79	54	89	47	84	41	
10...	77	37	73	40	82	44	85	49				82	51	80	42	78	45	70	55	76	38	84	47	81	58	85	41	89	42	
11...	74	39	67	32	60	38	73	44				75	34	76	40	73	46	73	40	75	35	73	38	75	40	84	44	81	42	
12...	68	32	49	25	58	35	74	44				60	29	58	36	63	36	57	39	74	31	58	33	57	40	83	42	62	27	
13...	66	26	62	28	67	32	72	43				67	32	66	29	69	36	66	43	78	39	66	33	65	42	78	38	71	29	
14...	70	30	70	30	79	37	83	37				76	38	76	32	75	35	71	47	76	40	75	37	75	46	82	42	78	31	
15...	74	31	72	33	79	38	87	43				79	42	78	34	77	39	74	50	79	42	81	40	78	51	89	41	82	32	
16...	76	32	76	36	82	36	87	45				80	43	78	35	77	41	75	51	77	43	81	41	82	54	76	34	82	34	
17...	74	30	70	35	80	40	85	45				81	50	77	37	77	43	78	54	76	45	79	44	80	54	69	28	83	35	
18...	60	24	60	25	67	28	71	37				70	32	74	42	77	49	61	35	76	48	69	40	64	44	70	29	72	24	
19...	65	21	66	21	71	29	72	40				75	36	78	38	78	46	67	43	75	53	80	32	72	45	64	32	76	32	
20...	64	40	65	42	72	45	73	44				80	48	81	39	79	46	72	49	72	48	83	41	78	54	66	29	78	32	
21...	54	34	60	37	68	39	78	34				68	34	68	47	67	40	61	36	86	43	66	43	58	45	64	24	73	33	
22...	56	17	54	19	65	25	80	36				67	27	66	27	61	32	57	36	85	41	66	26	59	38	68	34	62	21	
23...	66	19	68	23	69	26	77	31				70	29	76	26	73	30	65	39	80	38	74	28	67	41	70	35	78	26	
24...	72	22	74	30	82	40	78	31				81	43	83	34	79	37	77	42	79	34	86	32	82	49	80	36	82	35	
25...	81	33	75	38	86	43	85	36				82	48	84	45	73	47	83	60	78	30	75	36	84	59	83	38	85	51	
26...	76	38	73	37	82	50	85	32				70	47	76	42	56	50	73	55	77	47	74	46	76	56	78	39	78	30	
27...	79	35	75	33	80	43	88	36				78	42	74	37	62	45	73	49	79	43	80	44	80	53	79	43	82	36	
28...	79	40	77	41	83	46	85	48				79	45	77	41	58	46	78	56	80	42	85	42	81	53	62	37	76	45	
29...	70	36	70	40	73	43	85	44				70	40	79	37	66	37	67	45	85	44	75	43	74	53	60	29	62	36	
30...	66	34	65	34	70	42	75	47				71	42	78	39	67	38	65	47	68	44	78	38	71	50	57	43	60	33	
31...																														
Mns	70.8	35.0	68.5	36.1	75.0	42.0	82.2	44.9				75.2	43.2	75.5	40.0	72.0	43.2	71.1	50.2	76.2	43.6	77.3	42.9	74.6	51.8	76.5	38.7	78.3	35.5	

Date.	Nevada.																							
	Ely.		Eureka.		Fallon.		Jean.		Lovelock.		Millet.		Mina.		Quinn River Ranch.		Reno.		Tecoma.		Tonopah.		Winnemucca.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	69	49	76	52	82	55	94	62	84	49	76	53	88	50	79	58	70	52	94	47	73	58	82	53
2...	71	48	77	50	84	48	98	66	89	47	79	45	88	53	79	44	80	46	88	48	75	54	81	50
3...	70	45	80	48	85	53	90	62	92	38	83	41	89	50	83	52	83	49	86	48	78	55	85	45
4...	68	41	79	48	86	53	92	60	90	42	79	45	87	59	85	44	82	50	87	46	72	57	86	51
5...	71	46	74	48	84	50	96	62	85	45	77	49	85	46	87	47	79	48	82	49	72	54	84	45
6...	75	45	76	47	87	48	92	60	86	43	78	41	87	50	84	48	81	48	84	48	74	56	83	51
7...	70	43	76	46	85	50	88	58	79	41	79	45	90	48	85	44	84	40	86	48	77	55	84	45
8...	75	43	79	45	88	50	90	60	92	40	82	41	92	50	89	39	88	50	88	46	80	60	87	42
9...	78	43	82	51	90	50	92	58	89	38	83	43	93	56	80	44	87	60	84	46	81	61	90	42
10...	78	50	82	59	88	50	90	56	91	40	85	53	87	49	87	49	79	53	84	47	81	59	84	48
11...	73	46	76	37	78	46	90	56	90	35	77	44	70	39	87	44	67	44	81	46	63	45	63	26
12...	59	31	61	29	69	36	84	60	91	38	65	34	83	37	80	30	70	38	80	44	64	39	67	30
13...	70	33	74	32	78	37	82	53	92	40	75	31	86	39	80	37	80	44	71	45	78	32	78	32
14...	77	37	78	40	82	39	85	50	96	41	79	33	88	42	81	30	83	41	76	38	76	55	83	33
15...	78	38	80	48	87	40	90	64	78	43	81	35	87	46	92	33	85	43	78	40	77	59	87	45
16...	78	40	81	48	89	40	90	66	89	38	82	35	89	42	89	30	85	47	76	40	77	59	88	29
17...	77	44	80	57	85	43	90	62	82	35	83	38	87	45	80	30	80	46	80	38	79	55	74	40
18...	75	36	75	32	77	33	90	62	80	42	78	34	86	43	80	30	81	38	72	31	78	50	74	29
19...	76	37	77	43	85	45	92	66	72	38	79	33	90	40	81	30	81	45	68	27	75	56	79	